REMARKS

In response to the Office Action of June 22, 2006, Applicants ask that all claims be allowed in view of the amendments to the claims and the following remarks. Claims 1, 2, 5, 8-12, 15, 18-22, 25, and 28-39 are pending, with claims 1, 11, and 21 being independent. Claims 1, 11, and 21 have been amended, claims 3, 4, 6, 13, 14, 16, 23, 24, and 26 have been cancelled, and claims 34-39 have been added. No new matter has been introduced.

Telephone Interview

Applicants thank the Examiner for the telephone interview that took place on October 31, 2006. Applicants' representative and the Examiner discussed "measuring a communication delay arising from a receiving data buffer," as recited in amended independent claims 1, 11, and 21, in light of Shaffer (U.S. Patent No. 6,683,889). The Examiner suggested that Applicants amend the claims to further describe the measured communication delay.

Rejection under 35 U.S.C. § 103(a)

Claims 1-6, 8-16, 18-26, and 28-33 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shaffer in view of Hodson ("Skew Detection and Compensation for Internet Audio Applications"). The cancellation of claims 3, 4, 13, 14, 23, and 24 renders the rejection of those claims moot. Regarding the remaining claims, Applicants request reconsideration and withdrawal of the rejection because none of Shaffer, Hodson, or any proper combination of the references describe or suggest the subject matter of the independent claims. For example, none of Shaffer, Hodson, or any proper combination of the references describe or suggest measuring an instantaneous communication delay arising from a receiving data buffer two or more times over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer, determining a communication delay by averaging the instantaneous communication delay measurements, and comparing against such an average as a basis for making determinations related to latency adjustment.

As amended, independent claim 1 recites a method for dynamic latency management in a real-time electronic communication. The method includes, *inter alia*, measuring an instantaneous communication delay arising from a receiving data buffer two or more times over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer. The method includes determining a communication delay by averaging the instantaneous communication delay measurements. The method includes accessing a predetermined range for a communication delay. The predetermined range includes an upper and lower bound. The method includes comparing the determined communication delay with the predetermined range for a communication delay. If, based on the comparison, the determined communication delay is outside the upper or lower bound of the predetermined range, the method includes determining a latency adjustment necessary to adjust the size of the determined communication delay to within the predetermined range and modifying a number of samples of a playback data block passing through the receiving data buffer based on the latency adjustment determined to be necessary to adjust the size of the determined communication delay.

Shaffer describes examining the contents of a jitter buffer during a transmission. See Shaffer at col. 2, lines 16-17. Shaffer describes determining jitter buffer occupancy relative to buffer occupancy thresholds (i.e., T1 and T2). See Shaffer at col. 2, lines 9-27 and 59-61 and Fig. 2. More particularly, Shaffer describes setting a jitter buffer to a predetermined depth and, for the jitter buffer, measuring jitter arrival rate characteristics, such as the length of inter-packet gaps. See Shaffer at col. 5, lines 23-30 and 41-45 and Figs. 6 and 7. If the buffer occupancy falls below a first threshold (i.e., T1), Shaffer determines that minimum unplayed jitter buffer occupancy has fallen below the threshold T1 (i.e., the buffer is emptying too quickly), and, in response, increases the buffer size. See Shaffer at col. 3, lines 15-17 and col. 5, lines 31-34 and Fig. 6. If the buffer occupancy exceeds a second threshold (i.e., T2), Shaffer determines that the maximum unplayed jitter buffer occupancy exceeds the threshold T2 (i.e., a delay associated with the buffer is too long), and, in response, decreases the buffer size. See Shaffer at col. 3, lines 12-16 and col. 5, lines 35-38 and Fig. 6.

As such, Shaffer describes setting a jitter buffer to a predetermined depth (e.g., a predetermined occupancy) and measuring a delay from receipt of a first packet until receipt of a next packet. However, Shaffer does not describe or suggest measuring an instantaneous communication delay arising from a receiving data buffer over any particular time window, let alone measuring the communication delay over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer. Moreover, Shaffer does not describe or suggest measuring an instantaneous communication delay two or more times and determining a communication delay by averaging the instantaneous communication delay measurements.

As discussed in detail in Applicants response dated June 6, 2006, Hodson describes detection of, and compensation for, audible interruptions in audio streams due to clock skew. See Hodson at abstract. More particularly, in order to detect clock skew, Hodson describes adding a mapping offset to each arriving packet in order to map the arriving packet from its source's time (e.g., the clock of the system that sent the packet) to the local time (e.g., the clock of the system that receives the packet). See Hodson at § 2. For any given packet, the sender's clock may be faster than the receiver's clock, or the sender's clock may be slower than the receiver's clock. See Hodson at § 1. Any difference in the clock rates greater than the mapping offset is clock skew. To determine the clock skew, Hodson maintains a running estimate of the mapping offset (m_i) and identifies any divergence from the mapping offset assigned to the current packet stream (m_{Active}). See Hodson at § 2. When a significant divergence is detected (i.e., a large clock skew is present), Hodson applies a clock skew compensation algorithm. See Hodson at § 2.

As such, Hodson describes identifying clock skew on a packet-by-packet basis by monitoring for a divergence between an expected mapping offset for a particular packet (i.e., the *ith* packet) and an actual mapping offset for the particular packet. See Hodson at § 2. Stated differently, Hodson performs a comparison of the expected mapping offset and the actual mapping offset for each packet, and, at the end of such processing, Hodson has determined a collection of clock skew data points, any one of which Hodson may have used to identify clock

skew for a particular packet. However, Hodson does not describe or suggest measuring an instantaneous communication delay two or more times and then averaging the instantaneous communication delay measurements to determine a single communication delay value that can be compared with a predetermined range for a communication delay. Moreover, Hodson necessarily cannot, and does not, describe or suggest measuring an instantaneous communication delay arising from a receiving data buffer two or more times over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer.

Accordingly, Shaffer, Hodson, or any proper combination of the references does not describe or suggest measuring an instantaneous communication delay arising from a receiving data buffer two or more times over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer, and determining a communication delay by averaging the instantaneous communication delay measurements, as recited in independent claim 1.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of independent claim 1, along with claims 2-6, 8-10, and 31 that depend therefrom.

Independent claim 11 recites a computer program, residing on a computer-readable medium, for dynamically managing latency in a real-time electronic communication in a manner corresponding to that of independent claim 1, and independent claim 21 recites a system that does the same. Accordingly, for the reasons noted above with respect to independent claim 1, Applicants request reconsideration and withdrawal of the rejection of independent claims 11 and 21, along with claims 12-20, 22-30, 32, and 33 that depend therefrom.

New Claims 34-39

New claims 34-30 depend directly from independent claims 1, 11, and 21, respectively. At least for the reason of that dependency and the reasons noted above with respect to independent claims 1, 11, and 21, Applicants submit that claims 34-39 are allowable.

New Claim 40

New independent claim 40 recites a method for dynamic latency management in a real-time electronic communication. The method includes measuring an instantaneous communication delay arising from a receiving data buffer two or more times over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer. The method includes determining a communication delay by averaging the instantaneous communication delay measurements. The method includes accessing a predetermined range for a communication delay, comparing the determined communication delay with the predetermined range and making determinations related to latency adjustment based on the comparison.

As described above, none of Shaffer, Hodson, or any proper combination of the claims describe or suggest measuring an instantaneous communication delay arising from a receiving data buffer two or more times over a time window that is long enough to capture a complete cycle of high-to-low fluctuations in the receiving data buffer, and determining a communication delay by averaging the instantaneous communication delay measurements. Therefore, for at least the reasons noted above with respect to independent claim 1, Applicants submit that claim 40 is allowable.

Conclusion

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this reply should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Pursuant to 37 C.F.R. §1.136, Applicants hereby petition that the period for filing the Response to Office Action be extended for two months to and including November 22, 2006

The fee in the amount of $650.00 including $200.00 for the excess claims fee and $450.00 for the two-month extension of time fee is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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